



PATENT APPLICATION  
Mo-6802  
LeA 35,077

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION OF )  
EBERHARD KONIG ET AL ) GROUP NO.: 1711  
SERIAL NUMBER: 10/079,661 ) EXAMINER: U.K. RAJGURU  
FILED: FEBRUARY 20, 2002 )  
TITLE: ONE-COMPONENT POLY- )  
URETHANE STOVING COATING) )  
COMPOSITIONS AND THEIR )  
USE )

APPEAL BRIEF

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal mailed on June 25, 2004. The Notice of Appeal appeals the rejection of Claims 1-5 in the Final Office Action dated January 27, 2004.

The headings used hereinafter and the subject matter set forth under each heading are in accordance with 37 C.F.R. § 1.192(c).

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 \_\_\_\_\_ Date 8/25/04

Gary F. Matz, Reg. No. 45,504

Name of applicant, assignee or Registered Representative

A handwritten signature in black ink, appearing to read "Gary F. Matz".

Signature

August 25, 2004

Date

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## **I. REAL PARTY IN INTEREST**

The named inventor has assigned his interest in this application to Bayer Aktiengesellschaft (Bayer), and, as such, Bayer is the real party in interest in this Appeal.

## **II. RELATED APPEALS AND INTERFERENCES**

The Appellant is unaware of other appeals or of any interference that would directly affect or be directly affected by, or have bearing on, the present appeal.

## **III. STATUS OF CLAIMS**

Claims 1-5 are rejected under 35 U.S.C. § 103(a), as being directed to subject matter which would have been obvious to one of ordinary skill in the art at the time the invention was made from the teachings of U.S. Patent No. 6,060,573 to Konig et al. (hereinafter "Konig) taken in view of U.S. Patent No. 5,688,890 to Ishiguro et al. (hereinafter "Ishiguro").

## **IV. STATUS OF AMENDMENTS**

The claims in this application have not been amended. Appellant has filed responsive arguments arguing for the allowability of the originally filed claims on January 23, 2003 to the first Office Action dated October 23, 2002, July 23, 2003 to the second Office Action (non-final) dated April 25, 2003, and March 24, 2004 to the Final Office Action dated January 27, 2004. In the Advisory Action dated June 1, 2004, the Examiner indicated that the request for reconsideration was considered, but did not place the application in condition for allowance.

## **V. SUMMARY OF THE INVENTION**

The claims on appeal are directed toward aqueous- or solvent-based, one-component, polyurethane stoving coating compositions containing

- i) polyisocyanates blocked with CH-acidic esters, especially malonic esters,
- ii) OH-containing polymeric compounds, and
- iii) 0.5 to 4.0 wt.%, based on the solids content of components i) and ii), of

tetravalent titanium compounds.

## **VI. ISSUES PRESENTED**

The following issue is presented in this Appeal:

- a) Whether Claims 1-5 are directed toward obvious subject matter in light of Konig taken in view of Ishiguro.

## **VII. GROUPING OF CLAIMS**

Claims 1-5 stand or fall together.

## **VIII. ARGUMENT**

Each issue presented for review is addressed hereinafter under the appropriate heading:

### **Whether Claims 1-5 are directed toward obvious subject matter in light of Konig taken in view of Ishiguro.**

Appellant discovered a one-component polyurethane coating composition mixture having sufficiently good crosslinking at a stoving temperature of 90°C/30 minutes. The inventive polyurethane stoving coating composition includes a polyisocyanate blocked with a CH-acidic ester, OH-containing polymeric compound, and a tetravalent titanium compound. Appellant has found that the presence of the tetravalent organic titanium compound as catalyst provides for stoving temperatures of less than 100°C, which was a problem in the prior art (page 1, lines 24-28 of the specification).

Thus, the present invention provides aqueous- or solvent-based, one-component, polyurethane stoving coating compositions containing

- i) polyisocyanates blocked with CH-acidic esters, especially malonic esters,
- ii) OH-containing polymeric compounds, and
- iii) 0.5 to 4.0 wt.%, based on the solids content of components i) and ii), of tetravalent titanium compounds.

Konig discloses a blocked polyisocyanate which has isocyanate groups blocked with CH-acidic esters, a content of blocked isocyanate groups, and a content of formaldehyde. The blocked polyisocyanates are used in one-component polyurethane stoving compositions, which may be cured at relatively low stoving temperature of about 100°C, as crosslinking agents for organic polyhydroxy compounds.

Ishiguro discloses a thermoplastic polyurethane composition that includes a thermoplastic polyurethane and a tin compound. The thermoplastic polyurethane composition is produced by the successive steps of obtaining a polymer diol by polymerization in the presence of a titanium-based esterification catalyst, decreasing the activity of the titanium-based catalyst contained in the polymer diol, and polymerizing the polymer diol, an organic diisocyanate and a chain extender in the presence of a tin compound (col. 11, lines 18-24). The titanium-based catalyst is deactivated with water at a temperature of from 70° to 150°C (Col. 6, lines 27-48).

In the Advisory Action dated June 1, 2004, the Examiner replied specifically to Appellant's alleged statement that "Ishiguro's titanium compounds are not needed as active component for a polyurethane composition," presumably relating to the third full paragraph on page 3 of the Response dated March 24, 2004. Appellant's actual statement was:

In Ishiguro, the titanium compounds are used as catalysts for making polyesterpolycarbonate diols (col. 4, line 46 to col. 5, line 8). The titanium compounds are then deactivated before reaction with a diisocyanate in the presence of a tin catalyst. Thus, Ishiguro discloses the use of titanium compounds as catalysts for esterification reactions and not as an active component of a one-component polyurethane stoving coating composition as in the present invention.

The Examiner then cites to col. 2, lines 26-29 of Ishiguro "that titanium-based catalysts also develop catalytic activity for the urethanization reaction." The Examiner, however, ignores the remainder of this disclosure where it is noted that decreasing the activity of the catalyst is important and the "troubles" that result are discussed. Thus, Ishiguro explain the undesirable nature of the Examiner's

proposition (col. 2, lines 30-43). It appears that the Examiner is of the opinion that it can be assumed that these titanium catalysts act both for the urethanization and for the transesterification reaction.

Although the composition described in Ishiguro is a so-called polyurethane coating system it does not react by the polyurethane mechanism. In the course of the crosslinking reaction no new binding of urethane groups takes place and no so-called transurethanization takes place.

In Ishiguro, the urethane groups are formed by the lengthening of the starting materials with diols. They are not formed during the crosslinking reaction. A comparison with polyurethane systems is therefore not justified.

In the present invention, Appellant surprisingly found that the transesterification reaction in the malonic-acid-blocked systems takes place at low temperatures (80-90°C). The reaction time is 30 minutes. Typical transesterification reactions take considerably longer and require higher temperatures, thus providing a surprising result.

When combining references, the burden is on the Examiner to show some motivation in the cited prior art to modify the primary reference with another reference. The Examiner's suggested motivation for combining Konig and Ishiguro is that one skilled in the art looking to provide coating composition with excellent moldability and uniformity would be motivated to use the tetravalent titanium compound disclosed by Ishiguro because at col. 6, lines 45-53, Ishiguro discloses using titanium catalysts at a preferred temperature range of 90°C to 130°C.

However, as indicated above, the Examiner is mistaken in asserting that this disclosure has anything to do with how tetravalent titanium compounds are used in the claimed invention. In the claimed invention, the tetravalent titanium compounds are used to catalyze coating compositions to effect reaction at temperatures as low as 90°C or 85°C (see page 2, lines 15-22 of the specification).

In Ishiguro, the titanium compounds are used as catalysts for making polyesterpolycarbonate diols (col. 4, line 46 to col. 5, line 8). The titanium compounds are then deactivated before reaction with a diisocyanate in the presence of a tin catalyst. Thus, Ishiguro discloses the use of titanium compounds as

catalysts for esterification reactions and not as an active component of a one-component polyurethane stoving coating composition as in the present invention.

The combined references therefore suggest using a tin compound as a catalyst to form a polyurethane and not a tetravalent titanium compound as used in the present invention. There is no suggestion or motivation in Konig and/or Ishiguro to do otherwise. One skilled in the art would not use titanium compounds as catalysts in the polyurethane stoving compositions of Konig, because Ishiguro only discloses their use for catalyzing esterification reactions. Therefore, there is no indication for successfully making the combination to meet the goals of the invention.

The Examiner is on the record as stating that Konig does not mention using tetravalent titanium compounds and that Ishiguro discloses a titanium-based catalyst, which would have been obvious to use in the stoving compositions disclosed by Konig (Office Action dated April 25, 2003, page 2-3). As noted above, Ishiguro discloses using the titanium compounds as catalysts for making polyesters. In the present invention, the titanium compounds catalyze the crosslinking reaction between acid blocked polyisocyanates and OH-containing polymeric compounds to form urethane groups. There is no disclosure or suggestion in either of Konig or Ishiguro motivating a skilled artisan to use a polyesterification catalyst to promote polyurethanization reactions. Thus, a stoving composition according to the present claims is not disclosed or in any way suggested by the combination of Konig and Ishiguro and Appellant has met the burden under 37 C.F.R. 1.192 (8)(iv).

Therefore, the rejection of Claims 1-5 under 35 U.S.C. § 103(a) is improper and should be withdrawn.

## IX. SUMMARY

When making rejections under 35 U.S.C. § 103, the Examiner has the burden of establishing a *prima facie* showing of obviousness. In re Fritch, 972 F.2d 1260, 1265, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992). To establish a *prima facie* case, the Examiner must satisfy three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention,

must contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or to combine references. See In re Fine, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Skinner, 2 U.S.P.Q.2d 1788, 1790 (Bd. Pat. App. & Int. 1986). Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the time the invention was made. See Amgen Inc. v. Chugai Pharmaceutical Co. Ltd., 927 F.2d 1200, 1208, 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991). Hindsight is not a justifiable basis on which to find that ultimate achievement of a goal was obvious. Id. Lastly, the prior art reference or combination of references must teach or suggest all the limitations of the claims. See In re Wilson, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Moreover, the teachings or suggestions, as well as the expectation of success, must come from the prior art, not Appellant's disclosure. See In re Vaeck, 947 F.2d 488, 492, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). Also, the mere fact that the prior art could be modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. In re Laskowski, 871 F.2d 115, 117, 10 U.S.P.Q.2d 1397, 1399 (Fed. Cir. 1989) (quoting In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984)).

Here, the Examiner has combined Konig and Ishiguro to establish his *prima facie* case. However, there is no suggestion or incentive that would have motivated the skilled artisan to combine the references as the Examiner has done because Ishiguro clearly indicates the undesirability of using the titanium compounds to catalyze the polyurethanization reaction. Thus, the combined references do not provide a reasonable expectation of success or teach or suggest all the limitations of the claims.

Therefore, the Examiner has not presented sufficient evidence to support his *prima facie* case and the rejection of Claims 1-5 under 35 U.S.C. § 103 should be withdrawn.

## X. CONCLUSION

The claims define a unique one-component polyurethane coating composition. The Examiner has misapplied the disclosure in Ishiguro to augment the disclosure of Konig in order to build his *prima facie* case. Thus, all of the limitations of the independent claim or the corresponding dependent claims are not found in the combined references. In order to establish a *prima facie* case, the Examiner must show that each limitation is met or made obvious by the applied prior art and the Examiner has failed to do so. The preponderance of evidence clearly establishes the allowability of Claims 1-5. Reversal of all of the Examiner's rejections and allowance of these claims are respectfully requested.

The Commissioner for Patents is hereby authorized to charge the \$330 Appeal Brief fee as well as any additional fees which may be required to Deposit Account No. 13-3848. An original and two copies of this Appeal Brief are enclosed.

Respectfully submitted,

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APPENDIX - CLAIMS ON APPEAL

Claim 1. An aqueous- or solvent-based, one-component, polyurethane stoving coating composition comprising

- i) a polyisocyanate blocked with a CH-acidic ester,
- ii) OH-containing polymeric compound, and
- iii) 0.5 to 4.0 wt.%, based on the solids content of components i) and ii), of a tetravalent titanium compound.

Claim 2. The stoving coating composition of Claim 1 wherein component i) comprises a polyisocyanate blocked with a malonic ester.

Claim 3. The stoving coating composition of Claim 1 wherein the tetravalent titanium compound comprises tetra-n-butyl titanate.

Claim 4. The stoving coating composition of Claim 2 wherein the tetravalent titanium compound comprises tetra-n-butyl titanate.

Claim 5. A plastic, metal, wood, paper, ceramic, mineral or glass substrate coated with the stoving coating composition of Claim 1.



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**LETTER**

Commissioner for Patents  
P. O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Enclosed herewith are three copies of an Appeal Brief in the matter of the subject Appeal. Please charge the fee for filing the Brief, \$330.00, to our Deposit Account Number 13-3848.

Respectfully submitted

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I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an enveloped addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 8/25/04  
Date

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Name of applicant, assignee or Registered Representative

  
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August 25, 2004  
Date